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ABSTRACT

The problems facing a rehabilitation counselor in successfully working with survivors of brain trauma are myriad. This review examined evaluation techniques, rehabilitation therapies, and existing services that have proven effective with traumatic brain injury (TBI) clients. There is a gap in rehabilitation services that results in the TBI survivor having multiple difficulties. Most times survivors are discharged when medically stable or when insurance benefits are exhausted. Based on the research examined, the following recommendations are made: (1) major changes are needed in the health care system so that adequate rehabilitation is available to all survivors; (2) a state department for head injury could be established to provide such services as housing, case management, and employment services; (3) state rehabilitation agencies could relax their attitudes and requirements to allow more services to be provided in the behavioral and psychosocial areas; (4) rehabilitation agencies need to provide more in-depth training on TBI and counselors need to take full advantage of such training when available; (5) counselors need to become involved earlier in the process of rehabilitation in order to provide counseling and information to survivors and families; (6) families and survivors need to take part in local head injury support groups for peer support and information exchange; and (7) rehabilitation grants could be obtained to implement programs to address behavioral, psychosocial, cognitive, and community re-entry service needs for the TBI client. (LLL)

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SURVIVING TRAUMATIC BRAIN INJURY:
A STUDY OF POST ACUTE REHABILITATION SERVICES

A Seminar Paper Presented to the
Faculty of the College of Education
Ohio University

In Partial Fulfillment
of the Requirements for the Degree
Master of Education

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Suellen Schuyler

November, 1991

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for the School of Applied Behavioral Sciences and Educational Leadership and the College of Education

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Chapter One

Introduction and Problem Statement

Introduction

The problems facing a rehabilitation counselor in successfully working with survivors of brain trauma are myriad. Technological advances in medicine now save many lives which would have been lost due to severe head injury less than a decade ago. As a result there is an increased demand and need for rehabilitation services to a previously unserved population of clients. Due to lack of training and of basic information about the nature of head injury, the counselor often resorts to a traditional service delivery pattern of restoring, training and placing the head injured individual, with 60 days follow up. Or they may be placed in programs for the retarded, chronically mentally ill or sheltered workshops for employment. Placements of this type are a "prescription for failure" as the head injured individual sees him/herself as different and does not want to be associated with these other disability categories. The rehabilitation process results in frustration for many counselors and clients alike.

The traumatically brain injured client is one of the most difficult clients with whom to work, particularly in the light of the all-encompassing deficits which may result from brain trauma. At the same time, access to

rehabilitation services may be blocked by the client's own deficits and seeming lack of cooperation/motivation, or the counselor's perception of the client. Some vocational rehabilitation agencies have reported up to a 90% failure rate with their head injured clients (Corthell & Tooman, 1985). The scope of the problem is growing, parallel with increasing survival rates. The National Institute of Handicapped Research (no date) reports that:

> Estimates vary, but by all accounts, traumatic brain injury is a problem of major proportion, justifying its label, "the silent epidemic." The National Head Injury Foundation reports that every year 30,000 to 50,000 of the 400,000 to 600,000 people who sustain traumatic head injuries are left with noticeable physical, social and cognitive deficits severe enough to prevent them from returning to their former levels of function. In 1981, the National Head and Spinal Cord Injury Survey estimated that while spinal cord injuries occur at the rate of five per 100,000 persons each year, traumatic brain injury occurs at the rate of 200 per 100,000 persons each year--40 head injuries for each spinal cord injury. (p. 1)

How many persons with head injuries were saved in emergency and acute care, only to face a lifetime in a nursing home or dependent on family members and public resources because adequate rehabilitation was not

available?

Statement of the Problem

The problem of this study is to identify a continuum of effective services in the rehabilitation of traumatic brain injury survivors.

Research Questions

1. What is the nature of traumatic brain injury and its resulting effects on the survivor?

2. What client characteristics create a need for rehabilitation services in living, learning and working?

3. What services and types of treatment/therapy have been developed to date that have shown potential for promoting successful rehabilitation outcomes.

4. Are there services that are often recommended that have not shown any significant benefits?

5. What types of problems do traumatic brain injury survivors encounter in accessing appropriate rehabilitation programs?

6. Are treatments, therapies and services available? If not, what actions can a rehabilitation counselor take to provide the most appropriate services despite a lack of resources?

7. Does a traditional Vocational Rehabilitation (V.R.) program of services work with the Traumatic Brain Injured (TBI) client? If not, why?

8. Are there other services or systems that could be

developed that would enable both the rehabilitation counselor and TBI client achieve better outcome?

Purpose of the Study

The purpose of this study is to provide information to the rehabilitation counselor and others with an interest in traumatic brain injury on the nature of this type of injury. The thrust of this paper will examine evaluation techniques, rehabilitation therapies and existing services that have proven effective with TBI clients. It is meant to assist the rehabilitation counselor in determining appropriate provision of services to this client population and thereby reduce failure rates for TBI clients.

Definition of Terms

Traumatic brain injury is often referred to by a variety of other terms: head injury, brain injury and brain trauma to name the more commonly used ones, but generally speaking, all refer to the same population. For purposes of this study TBI will be used to describe this population.

Traumatic brain injury is defined as a trauma to the brain which causes brain damage that results in significant impairment to the individual's physical, psychosocial and/or cognitive functional abilities. This trauma is most often a result of motor vehicle accidents but may result from blows to the head, gunshot wounds,

falls, other types of assaults and sports/recreation. A closed head injury may also occur following cardiac arrest, stroke, aneurysm rupture, drowning or anoxia according to the National Head Injury Foundation. Again, for consistency, any type of head injury will be referred to as TBI.

The Procedure

All articles listed in ERIC and Psych Lit in the Alden Library under the headings of "Head Injury" and "Traumatic Brain Injury" were reviewed for pertinence to this study. Those deemed appropriate were reviewed by this researcher. This paper will be based on the findings of this research.

Organization of the Study

Thus far, this paper has revealed in its content an introduction and general description of the problem and purpose for study. The following two chapters will contain a review of the current literature to answer the research questions, an analysis of the literature, a summary, conclusions and recommendations for the rehabilitation counselor pertaining the TBI client.

Chapter Two

The Nature of Brain Injury

Brain damage can be caused toxins, genetic abnormalities, substance abuse or degenerative processes, to name a few, and can occur any time in a person's life. This paper will focus on traumatic brain injury which causes brain damage as a result of trauma to the head. This trauma may occur when the head is hit, shaken violently or penetrated by an object.

There are two types of brain injury--closed and open. Closed head injuries occur when the brain itself is not penetrated. This type of injury is often the result of a car accident in which the brain has been violently disturbed, shaken and pushed against the bony ridges of the skull. Much of what is said about closed head injury can be applied to the rehabilitation of clients who have had strokes, brain tumors, aneurysms and damage due to anoxia. Clients with this type of damage closely resemble those with TBI in the constellation of symptoms exhibited and are considered closed head injuries.

Open head injury is a visible assault that may occur as a result of a gunshot wound, accident or mugging which may involve a severe beating with an object.

In serious injuries, loss of consciousness results and may last anywhere from a few minutes to a month or more. The length of unconsciousness or coma is one of the

best indicators of the amount of functioning that may return to the client--the shorter the coma, usually, the better the recovery.

Hospital discharge planning may begin when the survivor is medically stable; that is, out of coma, and no longer in need of feeding or respiratory intubation. Yet he or she may have a number of disabling conditions associated with the brain injury. Griffith (1983) points out the most persistent disabilities:

I. Physical Impairments
   A. Motor Impairments
      1. Spasticity - hypertonicity (increase over the normal tone) of muscles
      2. Bradykinesia - abnormal slowness of movement
      3. Ataxia - a failure of muscular/motor coordination
      4. Hemiparesis - hemiplegia
      5. Quadriparesis - quadriplegia
      6. Tremors
   B. Sensory Impairments
      1. Field cuts in vision
      2. Diplopia (double vision)
      3. Decreased acuity or blindness
      4. Partial or complete deafness
      5. Vertigo
      6. Pain syndromes

7. Heterotopic bone formation - formations that are abnormal or occur upon the wrong part of the body
8. Painful muscle spasms and rigidity

II. Communication Disabilities

A. Speech Impairments

1. Dysarthrias (articulation problems)
2. Prosody of speech (lack of variation in stress, pitch, tone and rhythm of speech)
3. Aphasias: mixed, receptive and expressive

B. Written Language Impairments

1. Dyslexia (loss of ability to read)
2. Dysgraphia (loss of ability to write)

III. Psychological Disabilities

A. Cognitive - Intellectual

1. Memory deficits
2. Decreased abstraction
3. Decreased learning abilities
4. Poor judgement
5. Poor quality control
6. Difficulty in generalization
7. Short attention span
8. Distractibility
9. Fatigability

B. Perceptual - Perceptual Motor

1. Reduced motor speed
2. Reduced eye-hand coordination

3. Poor depth perception

4. Spatial disorientation

C. Emotional

1. Impulsivity

2. Irritability

3. Depression

D. Behavioral - Personality

1. Poor self-image, reduced self-worth

2. Denial of disability or its consequences

3. Childlike behavior

4. Dependency, passivity

This multitude of symptoms may be exhibited during the transition period between acute care and eventual recovery. It is during this period that patients are released from the hospital as they no longer present acute medical problems. Long, Gouvier and Cole (1984) found that:

> During this transition period, the patient or client is largely left to his or her own devices. Decisions about returning to normal activity are frequently made without the benefit of relevant data. The clients and their families are forced to struggle through this transition period, without being given clearly defined expectancies and with no understanding about the nature of post-traumatic symptoms that may appear. During the transition

> period, the rehabilitation counselor can play a vital role in maximizing client recovery. Not only can the counselor recommend and coordinate appropriate services, he or she can also assist in client and family awareness of post-trauma behavior. (p. 40)

The reality of the situation, however, may be that the lack of payment sources and unavailability of therapies and rehabilitation services may hinder progress for many. Even so, the rehabilitation counselor can assist the client and family by providing counseling, support and advice in order to avoid the development of emotional complications and fragmentation of the family unit.

Psycho-Social Implications

Behavioral and Emotional Aspects of TBI

It seems that the psychological impairments following brain injury impede the survivor's ability to return to the family, school, and work more than the physical and sensory impairments. These behavioral deficits are ultimately more disturbing to family, peers and employers than are the physical stigmas.

Fisher (1985) states that reports show:

> a range of persisting personality alterations among the head injured, including disorders of behavior, mood and thought. These disturbances reflect a complex blend of the site of brain damage, premorbid

character and the patient's growing insight into the significance of residual disabilities. (p. 3)

Eames (1988) gives this reminder:

It is just as important, however, to remember that the injury has happened to a particular brain, which has a complex history. The family, developmental, medical, psychiatric, and personal histories all contribute vulnerabilities and predispositions that are likely to be relevant to both the form and content of any behavior disorder. This was graphically expressed by Sir Charles Symonds: "It is not only the kind of injury that matters, but the kind of head." For example, someone who has a habitually aggressive sort of personality is likely to present severe problems when disinhibited by confusion (in early recovery) or frontal lobe dysfunction (later on); depressive or manic illness can be precipitated by head injury in those who have the genetic predisposition. (p. 3)

Fisher (1985) goes on to state:

During the acute recovery phase after trauma, the moderately to severely injured patient may manifest a range of disordered behaviors, including but not limited to restlessness, agitation, combativeness, emotional lability, confusion, hallucinations and other disturbed perceptions, disorientation,

> depression, paranoid ideation, hypomania, and confabulation. Although these derangements are disturbing, families often associate them with early recovery phase and anticipate their resolution. Nevertheless, although the character of the patients' behavioral problems may change with time, there is a growing corpus of research that suggests that persisting psychiatric morbidity may often be the rule, rather than the exception, after moderate to severe trauma. (p. 5)

In a study of one-year post-injury survivors, Kaplan (1988) showed that psycho-social deficits incurred in brain injury are longer lasting and more difficult to treat than the physical problems. Problems with anger and irritability and deficits in empathy, insight, planning and carry-through and the lack of ability to profit from experience led to personal, family and vocational problems for all survivors.

Another study on ten-year post-injury survivors came to similar conclusions: The largest percentage (45%) of individuals with TBI cited socialization difficulties as their major problem. Another 21% reported that physical problems, dependency, and lack of motivation represented their major problems, while 17% said unemployment was their major problem. One patient cited poor memory as the major problem. Fourteen percent gave no response to this

question (Rappaport, Herrero-Backe, Rappaport & Winterfield, 1989).

The same study also found that early admission to an intensive hospital rehabilitation program has a significant positive effect on a long term outcome of TBI patients, as well as short term outcome.

This is important because it is usually in the transition period of acute medical care and long-term recovery that most survivors are released from hospitals to families who are unprepared to deal with these behaviors that surface concurrently.

Hogan (1988) states that the need for programs that accept clients with behavior disorders is second only to the need for long-term independent living programs for survivors without funding on a national level. He further states:

> Behavioral and cognitive issues, often in the absence of significant physical deficits, set this group apart from those with other disabilities. Behavioral and social characteristics are the chief determinants of successful re-integration into the community. Yet, there are few private, and even fewer publicly supported, programs for individuals exhibit behavior disorders. Additionally, many clients find themselves discharged from programs because of behavior problems. As a result, family breakdown is

> often significant in the first year following the injury, since families seem to be better equipped to deal with physical and cognitive deficits than behavioral issues. Without intervention, behavior problems are likely to worsen over time, and the effects on a survivor's social network and support system are devastating. (pp. 62-63)

These foregoing studies seem to suggest a need for early rehabilitation efforts to take place, particularly in the behavioral-psychosocial realm, to facilitate further progress in cognitive, physical and vocational abilities.

Cognitive Deficits

"The term cognitive has become a fixture in recent head injury literature. This term is defined as 'the act or process of knowing, including both awareness and judgement.' As such, it refers to thinking, reasoning, judgement and remembering" (Murray, 1985, p. 1).

Persistent deficits in attention, concentration, memory/learning, perception and problem solving are complaints of patients and their families.

The principal deficits in cognitive abilities occur in the following areas, according to Corthell and Tooman (1985):

Arousal

The client may have fluctuating alertness, have difficulty maintaining vigilance for extended periods of time and may fatigue easily and need periodic "rest breaks." Arousal deficits can lead to inconsistent work performance, failure to perform up to potential and failure to take in and utilize information.

Attention/Concentration

The client may have a shortened attention span, decreased concentration and increased distractibility. He/she may be unable to focus attention on relevant aspects of a task, maintain that attention for extended periods of time, shift smoothly between two aspects of a task, or engage in extended mental effort. All of these will interfere with any task that is not rotely repetitive, or require attention to out put to modify performance.

Learning and Memory

Memory and learning are the single greatest cognitive problems that interfere with ability to return to work. Clients are often able to perform overlearned or well rehearsed routines as long as there are no unexpected changes. Even when a client can tell you what he/she would do in a certain situation, it often does not occur to them to utilize strategies, or remember what to do, when the situation actually occurs. Clients will often

have great difficulty learning new material or routines; or they may learn something at the moment, then be totally unable to recall and apply it the next day. In addition, one cannot assume that learning will generalize from one setting to another or even from one skill to a similar one.

Language Functions

The client's level of understanding both spoken and written material may be compromised. Repetition and/or language geared to the client's functioning may be necessary to assure comprehension. The client may not be able to express themselves clearly due to word-finding difficulty and limited ability to accurately communicate thoughts and feelings. TBI survivors may give the impression of comprehending complex instructions but be unable to integrate all of that information to put it to use. The person may also have difficulty writing memos, papers or other written work which requires organization, cohesiveness and fluidity of thought.

Constructional Functions

Constructional ability is directly relevant to jobs that involve any kind of assembly of parts. However, constructional deficits will also interfere with a person's efficiency in physically arranging his/her environment.

Reasoning and Concept Formation

One of the most common and debilitating deficits following TBI is the reduced or lack of ability to reason abstractly, and to form and apply concepts flexibly. This is usually the result of frontal lobe damage. He/she may not be able to catch meaning and interpret inferential statements as they were meant. In other words, thinking becomes concrete and literal. TBI survivors often have difficulty returning to school or work because they act inappropriately; this may be due to being unable to "read" social cues and vary behavior with ever changing situations and demands.

The client may also have difficulty generalizing learned material from one situation to another. He/she may not be able to apply what has been learned to the task at hand because no concept of how to solve the problem has been learned.

Executive Deficits

Governed by the frontal lobes, executive functioning is difficult to measure in formal testing situations. It is called into play when the client has to initiate, provide the structure, plan and organize for some goal themselves.

The client may not be able to formulate realistic goals nor initiate action to reach goals without guidance. Deficits in planning and follow-through may exhibit

themselves in the manner in which tasks are accomplished; i.e. only to terminate the action abruptly if frustration is encountered.

Another residual deficit that is frequently reported is a lack of empathy for others and the resulting poor interpersonal skills. The client may lose the inhibitions previously learned through socialization. He may not be aware of the impact his actions or words have on others. The client may also have difficulty perceiving nonverbal messages and interpreting them in social and work situations. As a result, his reactions or comments may seem odd, or even unkind to those around him.

Deficits in executive functioning, reason and concept formation may preclude the client from entering high-level employment areas such as law, medicine and administrative positions. Work which requires fast, decisive thinking as in police or military careers, emergency medical technology or fire fighting would not be reasonable goals for persons with deficits in these areas.

Cognitive Remediation

In a relatively brief period, cognitive remediation has become one of the fastest growing rehabilitation interventions provided to TBI individuals (Gordon, Hibbard, & Kreutzer, 1989). Frequently recommended as a follow-up therapy after acute care, it seems to speed recovery in recent head injured patients.

A cognitive remediation program is the treatment of "attention, concentration, and memory functions impaired by injury to the brain. The goal is to improve these functions, as well as perception, reasoning, concept formation, and problem solving which regulate and organize thinking and hence, behaving" (Cochran, (no date), p. III-6).

In some programs, computers are tools which lend themselves well to this type of rehabilitation and are found to be cost and time savings effective. Computers are best utilized when repetition is a requirement for learning or when used to teach specific skills. However, when computers are used as a sole means of instruction, cognitive remediation becomes a "canned" process and has little flexibility for the needs and problems of the learner (Gordon, et al., 1989).

Gordon, et al. (1989) go on to state the principles involved in designing an appropriate cognitive rehabilitation program:

> When designing an intervention program, it is critical to remember the bottom line in cognitive remediation is the generalization of learning. It is not enough to demonstrate that the performance of a task-specific skill or even neuropsychological test scores have improved. To be considered truly effective, training must affect the person's

> performance at home, school or work. Therefore, it is important to remember that at least some aspects of the training must be ecologically relevant. In other words, the patient must be taught how to apply the skills and principles being taught to their natural environments, and the effects of this training must have some impact on the person's day-to-day performance. (p. 82)

Cochran (no date) gives the following guidelines for judging the quality of a cognitive rehabilitation program in his training manual on rehabilitation of TBI:

1. The needs of the client for such a program have been documented by a neuropsychological evaluation.

2. The program utilizes an integrated team approach and has other basic remedial therapies (occupational, physical, and speech therapy). The integration is reflected in a written team assessment, plan, and evaluation. Client reports should integrate all sources of input.

3. After assessment, a written treatment plan should be developed that contains specific goals and objectives, an outline of methods used, and criteria for advancement or discharge.

4. Goals should be specified in functional terms. Functional areas where generalization is expected as a result of training should be delineated. Thus, the bridge

between the cognitive rehabilitation program and more intense, complex forms of training or placement will be specified.

5. An estimate indicating the expected duration of the program should be made to the individual and the vocational rehabilitation counselor.

6. Program activities should be structured to facilitate the integration of cognitive skills with the social and emotional needs of the individual. The design and implementation of the program should not encourage or support unrealistic expectations or excessive frustrations.

7. Each contact and the results of the contact should be documented.

8. Discharge criteria should be established.

To summarize, to be effective, the cognitive rehabilitation program should be relevant to the person's environment, focused on functional outcomes, individualized to accommodate the client's strengths as well as limitations and carried out with a team of specialists working with the client.

Under optimal circumstances, a significant portion of retraining for post-acute TBI clients would take place in "real-world" situations. For instance, opening a bank account would make classroom work in budgeting relevant to a tangible and achievable goal. Academic material may

seem artificial to the TBI client unless its relevance is made known and holds some significance for him (Leland, Lewis, Hinman, & Carillo, 1988).

Evaluation

To be able to plan a rehabilitation program with the client, the counselor needs a full functional assessment of the person's preserved skills and areas of deficit. Each person will vary in types and severity of deficit.

Since the survivor seems to recover physically in many cases, while still cognitively impaired, it is important that the counselor evaluate the client beyond the surface of the interview and background medical and psychosocial information. With TBI clients, one must remember that neither the client nor significant others may be able to accurately report strengths and deficit areas. A reported "memory problem" may actually be an attention/concentration problem or a receptive language deficit. Standard psychological testing does not accurately depict the client's cognitive functioning. A neuropsychological examination should be included in assessing and evaluating the TBI client (Cohen, 1985; Long, et al., 1984).

The Neuropsychological Evaluation

The neuropsychologist is a psychologist who specializes in brain-behavior relationships and a valuable source of information on all the cognitive, executive, and

behavioral/psychosocial deficits described in the preceding pages. A neuropsychologist describes the neuro-behavioral consequences of the injury and their impact on functional areas. This specialist may identify the most intact systems and compensatory strategies which can be utilized to overcome deficits (Corthell, et al., 1985).

Hallauer, Prosser, and Smith (1989) describe the use of this evaluation: The neuropsychological evaluation is a systematic, in-depth assessment of various abilities dependent on higher brain function. It is used to lay the groundwork for the entire process of vocational rehabilitation.

Such cognitive functions as verbal comprehension, verbal reasoning, memory and learning, visual/spatial abilities, and problem solving are measured in a neuropsychological evaluation which also evaluates tactile, auditory, and visual perception, as well as some motor abilities, such as, hand coordination. Finally, it assesses emotional functioning, including reaction to impaired abilities and such emotional factors as depression or anxiety which may interfere with cognitive function. The assessment generally requires a full day of testing and interviewing. Neuropsychological evaluation has been found to be predictive of a person's level of adaptive functioning (Hallauer, et al., 1989).

It is in large part the job of the neuropsychological

evaluation to alert the vocational counselor to what the pitfalls might be in working with the TBI client (Kay & Silver, 1988).

There are many questions the counselor may need answered if the client does not exhibit obvious deficits. If the neuropsychological report does not fulfill the counselor's expectations and need for information, he/she should initiate a discussion of such with the neuropsychologist and obtain additional information (Hallauer, et al., 1989).

Vocational Evaluation

To determine if employment is feasible and what may be a feasible area of training, the counselor will need some form of vocational assessment. This may be done in a number of ways: a vocational evaluation may be useful or one may want to try on-the-job evaluations or assessments in a simulated work environment or pre vocational program.

Vocational evaluations typically take a hands-on approach to evaluating mostly unskilled and skilled work potential. Consequently, there seems to be some potential in drawing from vocational evaluation approaches and incorporating those in neuropsychological assessments to allow greater specificity in neuropsychological vocational recommendations (Sauer, Greene, & Farr, 1984).

Because vocational evaluation focuses on the person's work potential, work performance/abilities, and work

adjustment needs, it differs from other professional testing. Its primary purpose is to determine the probability of a head injured person's ability to secure and remain in a realistic job or community placement (Moore & Bartlow, 1985).

Musante (1983) states:

> The approach to vocational evaluation and rehabilitation of this population is essentially different from other populations who may exhibit similar behaviors for several reasons. Having a brain injury and experiencing all of the psychological components associated with trauma, make these clients different from the developmentally disabled, for example. They are not accustomed to being told what to do by others, nor are they familiar with the experience of not comprehending social or personal interactions. The state of dependency in adulthood may be new to them. (p. 46)
>
> In an evaluation unit, such clients are sure to encounter tasks that were once simple for them and can no longer be performed in the same way, if at all. Therefore, the evaluator can encounter the anger and depression that these clients feel. (p. 47).

Restructuring and modifying work samples or using alternative methods of communication complicates the task

of the evaluator. However, the evaluation process for the traumatically brain injured client may require a more individualized approach as well as a longer time period over which to conduct the evaluation (Musante, 1983).

Referral for Vocational Evaluation

The best time for a complete vocational evaluation according to Broe (1988) is when the head injured individual is:

1. Functioning at a cognitive level seven or eight based on the Ranchos Los Amigos Cognitive Scale;

2. Discussing work as a future goal and desiring more challenge in daily activities;

3. Midway through cognitive remediation/day treatment programming;

4. Medically stable and adjusted to current levels of medication;

5. Physically and emotionally able to tolerate from three to six hours of activity a day;

6. Emotionally stable the majority of the day and able to manage his/her own behavior following compensatory strategies;

7. Able to communicate and interact with people in his/her environment;

8. Able to interact with the evaluator and take on appropriate work samples and testing instruments;

9. Able to arrange for reliable transportation;

10. Ready to make a commitment to actively participate in the evaluation process;

11. Adjusting to psychological/social aspects of his/her injury;

12. Alcohol and drug free at least 30 days and actively seeking treatment if needed.

Rehabilitation Implications

The National Institute of Handicapped Research (1982) indicates that only 10% to 25% of brain injured persons return to work within two years if they use the existing service system. However, 50% to 60% of those who were not employed became so when proper services were provided. (Moore & Bartlow, 1990, p. 5).

Moore, et al. (1990) also state:

Returning to work following a brain injury will require a careful evaluation of (a) the individual job or school setting; (b) the nature of the deficits; (c) the severity and kind of brain damage; and (d) the type of job and its location, physical demands, complexity, interpersonal requirements, language or visual perceptual requirements and degree of new learning required. The employer and co-workers' attitudes are also important. An understanding of the impairment disturbances and associated vocational and functional limitations is

critical and essential. (p. 7)

Community Support

Head injury requires three levels of care. In the acute phase, saving the person's life is the primary goal. In the second, or intermediate phase, is physical rehabilitation and includes regaining motor and language skills, as well as independence in the activities of daily living. The final phase, community rehabilitation, focuses on re-integrating the head injured person into the community (Malkmus, 1989).

Blanchard (1984) writes:

> After achieving medical stability and meeting the criteria established by the various facilities, the head- injured survivor may move from a hospital to an in-patient rehabilitation program, where he or she will learn a variety of skills in preparation for re-entry into the community. During this phase of rehabilitation, it may become apparent that community re-entry, for some persons, is not a feasible goal. These persons will require long-term placement in a structured, supportive environment. For those who "make it," the problem becomes one of finding adequate follow-up services. (p. 2)

Findings from two federally funded research projects (The Traumatic Brain Damage Project, at the New York University Medical Center, and the Severe Head Trauma

Project, at the Santa Clara Valley Medical Center) confirm the observations and clinical research of community rehabilitation workers who treat the head injured. These findings include the following:

1. The most rapid recovery from the head injury usually occurs in the first six months, but significant recovery can continue beyond that. Long-term treatment and follow-up are important.
2. Physical problems decrease over time during rehabilitation but psychological complications increase. The psychological distress experienced by head injured persons and their families is more limiting than physical impairment, but psychological services may be unavailable.
3. Family reactions are critical to successful rehabilitation. Family intervention and education help significantly. Education of both professionals and family members is important.
4. Services needed by clients are often unavailable in the community. Existing services may be adapted but in some cases must be improvised. (Blanchard, 1984, p. 3)

Chi and King (1990) describe the Brain Damage Service System in California, a pilot program of the State Department of Mental Health, which was formed to provide technical and informational services for families caring

for brain-impaired persons. This program, the Family Survival Project, provides information and referral, consultation with families, legal consultation and in-home support services. California became the first state to address the problems of severely inadequate assistance and long-term care for people with progressive or irreversible brain damage.

Counseling/Case Management Practices

"The primary goal of counseling with this population is to assist the client in learning to cope with his or her functional limitations and to compensate, by whatever methods available, for these limitations" (Blanchard, 1985, p. 4).

It is important to know that "many organic disorders cannot be treated by traditional psychotherapy because learning and insight will not take place" (Blanchard, 1984, p. 9).

Two techniques are gaining recognition in working with the head injured client--behavior modification and reality therapy.

Blanchard (1984) describes the use of these techniques:

> Behavior modification follows the therapy that all behavior is learned through reinforcement. The goal is to eliminate maladaptive behaviors and to learn more effective behaviors in their place. The

behavior modification approach focuses on overt behaviors, and emphasizes the present. Insight is not considered necessary for change.

Behavior modification is considered by some to be an effective method of treatment for head-injured clients in the acute and intermediate stages of rehabilitation, where it is relatively easy to achieve a level of consistency. However, behavior modification methods are not easily applied outside a clinical setting. In the community phase of rehabilitation, it may be difficult to provide systematic contingencies and effective, consistent reinforcement. However, techniques of role-playing, modeling and social reinforcement may be successfully employed in certain counseling situations, particularly group sessions. (p. 13)

Reality therapy emphasizes problem solving in the real world. The focus is on the present, rather than the past or future events. Reality therapy does not stress awareness or insight; the emphasis is on behavior change, and the acceptance of responsibility for one's behavior. Reality Therapy can be applied not only to specific problem areas, but to many life situations. The technique emphasizes a person's strengths, rather than weaknesses or deficits. The main drawback to the use of reality therapy with all

> head injured clients is that, in some instances, the organic component of brain damage can undermine the process; the client is not really "responsible" for his or her behavior; a brain dysfunction is "responsible." However, the advantages outweigh the disadvantages, and reality therapy should be considered as a viable counseling technique for many head injured clients. (p. 12)

Whichever technique or orientation is used, the primary tool of change in therapy will be the relationship between the counselor and client. A counselor must be prepared to be more directive and lend more structure than is usually needed in sessions when working with adults whose personality and cognitive processes have already been changed as a result of TBI.

A rehabilitation counselor may not only be called upon to provide counseling and education to the client and family, he or she may need to provide some case-management services. Dixon, Goll, and Stanton (1988) describe the active processes of case-management. They generally follow some sequential pattern, although various aspects may take place simultaneously and many are frequently revisited. The primary processes of case management are:

1. Assessing. This may be done in part or totally by the case manager or shared with a number of rehabilitation facilities or health professionals.

It is critical to get early identification of head injury, and early involvement of the assessment process. The assessment should include the identification of all factors related to the injury (injury characteristics), as well as psycho-social, vocational, fiscal and legal realities.

2. Organizing. This includes all assessments, data, professional resources, and specialists, as well as organizing the expectations of the patient, family, and sponsors of care.
3. Coordinating. This includes coordinating assessments, medical and rehabilitation specialists, the overall treatment plan, and the sequence of care. It is accomplished through communication with patients, providers, families and sponsors of care.
4. Referring. Depending on where the patient is in the continuum of care, this includes referrals for diagnostic services, specialty exams, entitlement programs and re-evaluation.
5. Negotiating. This is an extremely important and key skill for case managers because they frequently do not have direct decisional ability. Negotiating may include (a) rates for treatment with physicians, facilities, etc.; (b) alternative

settings and levels of care; (c) lengths of stays, and (d) services and equipment not normally covered by the carrier.

6. Counseling. This is a very informal process for most case managers, and occurs primarily with patients or families before or between stays in rehabilitation facilities. While patients are in rehabilitation programming, case managers serve as an additional support and resource to the family.
7. Reassessing. The continuous monitoring of quality of care, appropriateness of care, outcomes achieved, and the effectiveness of the ongoing treatment and discharge plan never stops. This is the most critical aspect of managing head injury survivors, and provides a constant loop back into the other processes of case management. (p. 331)

By providing these services, the counselor can possibly circumvent the problems which patients and families face when left to initiate program follow-up on their own after discharge, sometimes waiting until problems escalate and become significant before seeking help.

Community Re-entry

"The late effects of head injury may be perceived as a social skills deficit: a long term compromise of the interpersonal and instrumental skills required to solve

everyday problems" (Malkmus, 1989, p. 50). Rappaport, et al., (1989) reports the major problems cited by TBI survivors at a ten-year follow-up were socialization difficulties. Kaplan (1985) studied survivors one year post injury; due to his findings, he stressed that social skills training should be prioritized in any post-acute rehabilitation program.

Many TBI survivors have persistent difficulty perceiving, responding to and learning from social situations. Maintaining old relationships and establishing new ones present difficulty due to changes in personality and behavior. Cognitive deficits resulting in the inability to self-monitor behavior, respond appropriately to social cues and generalize learning to the real world contribute to this social dysfunction. Frequently, a post-acute phase of rehabilitation called community re-entry is necessary to bridge the gap between the medical setting and the social world (Malkmus, 1989).

Generally, the goals of a community reentry program include increasing the individual's capabilities to the highest level of functioning, assisting with the problems of transitioning from hospital to community life, increasing independent living skills, facilitating community survival skills and providing on-going support (Belanger, Berrol, Cale, Fryner, & Lock, 1989). It is recognized that the retraining of TBI survivors in these

skills must address the problem of generalization from one setting to another to be successful. Malkmus (1989) states: "Unless interventions are directed toward individually meaningful real-world outcomes and the reacquisition of effective interpersonal and instrumental skills, the head injured will continue to exist in a world of social isolation" (p. 51). The key term here is "real world." Leland, et al. (1988) reinforces this concept by stating: "The likelihood of successful skill transfer is increased when individuals are taught strategies for dealing with real world problems in real world settings" (p. 290). These researchers indicate the integration of the community as a learning tool in social skills retraining is necessary for generalization of learning.

One program this researcher found, The Bay Area Head Injury Recovery Center, is designed to use the community in a therapeutic manner. A large home, centered in a residential neighborhood, offers access to shopping, educational and leisure activities for its ten residents. Belanger, et al. (1985) describe the approach as a transitional program in which residents move through three phases of a rehabilitation process. In the first phase, the individual is re-learning self-care in a structured environment. In the second phase, the emphasis is on re-acquiring skills to relate to the members of the household. The third phase promotes the re-establishment

of significant family relationships and ties with the community. The elements in the last phase include the use of transportation and the pursuit of training and/or work. In phase three, the clients optimally show increased independence in areas of decision-making, self-initiation, travel, shopping and re-establishing family bonds. Supervision may be minimal at this point and the client will be discharged when it is established that continued gains may be made outside of the program.

Since there may be inherent problems in consistently using the community in providing training, an alternative setting may be developed to simulate settings in the community. Leland, et al. (1988) present a model of functional retraining in a transdisciplinary environment which complements traditional rehabilitation treatments by providing a realistic context in which the clients can use new skills with the support of and feedback from specialists from several disciplines. While strictly academic or classroom-type activities hold little relevance for many TBI survivors, environments simulating settings such as a post office, bank or work-place are far more likely to be meaningful and generalized to everyday activities.

An example using the skills of a transdisciplinary team in assisting the client is given:

...in a simulated bank, the speech therapist works on

> the communication skills required to make needs clear to the teller; the educational specialist focuses on math skills needed to balance a checkbook; the cognitive specialist addresses problem-solving strategies to correctly withdraw or deposit money; and the behavioral specialist addresses interpersonal behaviors for a bank environment. (Leland, et al., 1988, p. 293)

As the clients acquire the functional skills that allow them to effectively meet the demands of simulated setting, more actual community environments are incorporated into the retraining.

In order for the retraining to achieve optimal results, the preceding research (Malkmus, 1989; Belanger, et al., 1985; Leland, et al., 1988) indicates that the treatment planners must know specifically what type of home and school/work environment the client will be discharged to, in addition to the types of daily activities the person will encounter. Training should be individualized to the client needs accordingly with compensatory aids and strategies incorporated into the programming.

Vocational Re-Entry

The studies which have documented the number of TBI survivors who return to work without supportive services are not encouraging. Stapleton (1986) found in one

Maryland rehabilitation center that only 21% of the patients were re-employed after injury. In another study, Peck, Fulton, Cohen, Warren, and Antonello (1984) investigated vocational outcome in a group of 60 TBI survivors between the ages of 16 and 40. Only 13% were employed at pre-injury levels; 35% were at less demanding or sheltered levels, and 52% were unemployed. Brooks, McKinlay, Symington, Beattie, and Campsie (1987) recently investigated the employment status of 98 patients within the first seven years after brain injury and found an unemployment rate of 73%.

In contrast, Burke, Wesolowski, and Guth (1988) found that when a comprehensive 24-hour residential approach was taken, approximately 50% of the 34 clients followed were employed at 12-month followup. Wehman, West, Fry, Sherron, Groah, Kreutzer, and Sale (1989) describe the outcome of a supported employment program in Virginia: Of the 32 clients referred to the supported employment project, 15 were competitively placed with the assistance of job coaches and long-term followup, following job development and individual placement by employment specialists.

Wehman, et al. (1989) studied more in depth five TBI survivors who had consistently been unable to gain and/or hold competitive employment. All were placed in integrated settings earning at least minimum wage; all

retained employment longer than ever in the past, however, only two remained employed. The remaining three quit or were let go due to behavior problems including drug abuse.

Wehman, et al. (1988) drew several conclusions from their own studies and examination of other data: The severity and type of injury are clear determinants of post injury employment potential; the patients with the most severe injuries have a smaller likelihood of returning to work. Also, they concluded that 50% or less of patients with moderate to severe injuries are likely to be gainfully employed. Brain injury predominantly affects young men under 35 years of age, those who might typically be wage-earners. Finally, supported employment that provides job matching, job placement and job coaching might be successfully used with TBI survivors if they have a strong commitment to return to work and do not have an ongoing substance abuse problem.

Frequently, it is recommended that survivor transition into work by first completing a period of work adjustment, non-competitive employment (sheltered) or volunteer work before actual job placement is made. Job trials provide observation opportunities to assess employability while he/she obtains some work experience. Cohen (1985) states:

> The job trial provides the patient with a gradual entrance into the working role within an accepting

> environment in which problems can be detected and work upon (rather than punished with the risk of being fired as in a 'real world' placement. (p. 29).

During this period, vocational counseling should take place and focus on three main issues: 1) helping the rehabilitant realistically appraise his/her skills, abilities and deficit areas, 2) helping the client discover what types of occupations interest him/her, and 3) determining an appropriate plan of action to match the person's interests and abilities with an occupation (Dennis, Ebert, Wolfe, Mueller, Brintsell, & Vargo, 1986).

Some rehabilitants may wish to return to their former occupation; at times, this is unrealistic and counseling needs to take place to assist the person in forming realistic goals. Others may well be able to return to their former employment with some job duty modification or adaptations to the environment or work station. Still others need to be retrained for a new occupation better suited to the post-traumatic status. In any case, these may be obtained in various ways: return to former employment with modification and follow-up; placement into employment with on-site training and follow-up, on-the-job training for later competitive employment in a similar setting or enrollment in further educational/vocational/or technical training (Dennis, et al., 1986; Lyons & Morse, 1988).

As mentioned earlier in this section, supported employment is gaining momentum in the job placement phase of rehabilitation for TBI survivors. Corthell, et al. (1985) state that the "ongoing employment services available through supported work may be especially appropriate for the TBI client that requires ongoing cuing and occasional behavior adjustment" (p. 97). Through providing services at the job site, supported employment reduces the time spent getting the person ready to work. In addition, this approach guarantees to the employer that the job will get done, even if initially the job coach will have to do some of the work (Goodall, 1989).

The question of cost-effectiveness must be looked at from a global point of view. In previous studies (Wehman, et al., 1988a, 1988b, 1989), employment specialist or job coach intervention hours ranged from 210 to 451 hours until stabilization occurred, at a cost of $25 per contact hour. Therefore, the costs for job site training ranged from $5,200 to $8,600 per client. This seems to be a high cost per rehabilitation but one must consider the failure rate without supported employment services, and consider the statistical majority of TBI survivors being young males who have their entire work life ahead of them. Compensation for these survivors runs into millions of dollars per case over a lifetime and billions of dollars annually in direct costs and in loss of output and

productivity and loss of income (Stonnington, 1986).

Wehman, et al. (1988a, 1988b, 1989) and Goodall (1989) determined that many of the contact hours the employment specialist (job coach) are spent away from the job site performing case management activities. They conclude that costs could be reduced if statewide case management and residential programs were in place for TBI survivors as it is for other disability groups.

Chapter Three

Summary, Conclusions and Recommendations

Summary

The need and demand for rehabilitation services for TBI survivors is rising, due to medical and technological advances which now save many lives which would have been lost in recent years. Since this disability is of fairly recent emergence, many rehabilitation counselors have not had experience or training to assist them in effectively working with these clients. In addition, there is a dearth of programs available to the TBI survivor; many are limited in the scope of therapy, retraining or service available and others are not available to those without adequate payment sources.

Brain injury may result in deficits in nearly all areas of functioning and many survivors could benefit from therapy after they are discharged from acute care and rehabilitation units. Brain injury often causes changes in behavior and personality that show up in the recovery process and are long lasting. It is these psycho-social deficits that cause more problems in rehabilitation and returning to normal life for the TBI survivor. There are few treatment centers for behavior disorders and yet, unless it is treated early and successfully, the long range goals of rehabilitation may never be met.

Cognitive deficits refer to thinking, reasoning,

judgement and remembering and are persistent problems for the TBI survivor. Some of these deficits are remediable or able to be reduced by accommodation.

Cognitive remediation is often introduced while the client is still in inpatient status. It appears to speed up the natural recovery process, however, it is unclear whether or not it is beneficial, particularly if the majority of the remediation is done on computers. This type of programming makes generalization to real life problems difficult.

Evaluation is a necessary part of the rehabilitation process. TBI survivors should receive a neuropsychological evaluation rather than a standardized battery of psychological test usually used for IQ and achievement testing. The neuropsychological evaluations can give much information that the ordinary batteries for psychological testing cannot. The counselor needs to refer the client to the neuropsychologist with specific questions to be answered and initiate the referral by discussing the client with the evaluator.

Vocational evaluation is also an appropriate service and may be done in a number of ways. It is a hands-on approach to evaluate work potential. Modifying the work samples may be beneficial in evaluating TBI survivors or, in many cases, job trials may give the counselor more pertinent information.

Reports show few persons returning to work at the same

level of employment after sustaining a brain injury. Careful evaluation is required both of the job, environment, and of the individual. A support system is essential in assisting the survivor in returning to school or work.

TBI survivors may have to relearn activities of daily living and may have psychological complications over the long term recovery period. Families of survivors are also affected and can benefit from education and counseling. Many survivors could benefit from case management in their quest for independence and transition to the community.

A rehabilitation counselor may be of assistance to survivors and families by providing counseling to assist the client in coping with the resulting handicaps. Two techniques/theories that are being used with TBI survivors are behavior modification and reality therapy. A counselor may also assist in preparing the family to expect post-trauma differences and in giving information on rehabilitation services available to them. Case management may be needed and the rehabilitation counselor may be the only helping professional involved in the case.

In addition to daily living skills, social and interpersonal skills may need to be addressed. A phase of rehabilitation called community re entry is used to retrain individuals in these needed skills, bridging the gap from the medical setting to the community. This retraining is most effective when the client performs actual tasks that

will be used due to the inability to generalize learned activities in an artificial environment to the "real world."

Research indicates that a supported employment program may benefit TBI survivors in returning to work. The failure rate without any support system and along the traditional vocational rehabilitation lines may be 75% to 90%. Even with additional technical or educational training, on-the-job training is usually necessary. A job coach can not only train the client but can mediate with the employer and educate coworkers. The cost per rehabilitation is expensive but could be reduced if other community supports were in place.

Conclusions

Several conclusions may be drawn from the research, and without changes, the TBI survivor may not be able to achieve all that is possible in the near future. This is an underserved population due to lack of resources, inaccessibility of programs and lack of long term rehabilitation.

There is a gap in rehabilitation services that results in the TBI survivor having multiple difficulties as we have seen. Most times survivors are discharged when medically stable or when insurance benefits are exhausted. Much improvement may have been made but brain injury rehabilitation may require long term rehabilitation. There are no such services available. For example, in Ohio, a

person will be on his or her own from the time of being discharged from acute rehabilitation care until the time he or she is ready to go into vocational services of evaluation and placement. Chances are that they may end up in a psychiatric unit or hospital (as a number of my clients have) or have behavior problems become ingrained and difficult to remediate and/or develop substance abuse problems.

There has been a general lack of response on the part of state and federal agencies to this problem. Until services and support systems are developed for this population, the statistics for returning to work will probably continue to be low. This will be at enormous cost to society when we consider TBI an injury which, statistically, affects young males between 18 and 30, primarily wage earners who may be dependent on government and family assistance for their remaining years.

Recommendations

Based on the research examined, the following recommendations are made:

1. Major changes are needed in the health care system so that adequate rehabilitation is available to all survivors, not just the wealthy and over insured.

2. A state department for head injury could be established to provide such services as housing, case management, and employment services as in the Departments of

Mental Health and MRDD.

3. State rehabilitation agencies could relax their attitudes and requirements to allow more services to be provided in the behavioral and psychosocial areas.

4. Rehabilitation agencies need to provide more in depth training on TBI and counselors need to take full advantage of such training when available.

5. Counselors need to become involved earlier in the process of rehabilitation in order to provide counseling and information to survivors and families.

6. Families and survivors need to take part in local head injury support groups for peer support and information exchange.

7. Rehabilitation grants could be obtained to implement programs to address behavioral, psychosocial, cognitive and community re-entry service needs for the TBI client.

References

Belanger, S., Berrol, S., Cole, J., Fryer, J., & Lock, M. (1985). Bay area head injury recovery center: A therapeutic community. Cognitive Rehabilitation, 3, 4-7.

Blanchard, M. (1984). Counseling head injured patients: Guidelines for community mental health workers. New York: The New York State Head Injury Association.

Broe, T., & Broe, E. (1988). Vocational evaluation: Evaluating work potential for head injured individuals. Cognitive Rehabilitation, 3, 46-52.

Brooks, N., McKinley, W., Symington, C., Beattie, A., & Campsie, L. (1987). Return to work within the first seven years of head injury. Brain Injury, 11(a), 5-19.

Burke, W., Wesolowski, M., & Guth, M. (1988). Comprehensive rehabilitation: An outcome evaluation. Brain Injury, 2(4), 313-322.

Chi, K., & King, D. (1990). California's support programs for family care givers of the brain-impaired. Innovations (CSG Report No. RM-793) Lexington, KY: The Council of State Governments.

Cochran, W. (no date). Rehabilitation of traumatically head injured. (Available from [Regional Rehabilitation Continuing Education Program, P.O. Box 1358, Hot Springs National Park, AR]).

Cohen, J. (1985). Vocational rehabilitation of the severely brain damaged patient: Stages and processes. Journal of

Applied Rehabilitation Counseling, 16(4), 25-30.

Corthell, D., & Tooman, M> (1985). Rehabilitation of TBI (Traumatic Brain Injury). (Available from [Research and Training Center, Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout, Menomonie, WI]).

Dennis, S., Ebert, T., Wolfe, S., Mueller, H., Pointnell, E., & Vargo, F. (1986). A projected post-discharge rehabilitation program for closed head injured adults. Journal of Applied Rehabilitation Counseling, 18(2), 33-38.

Dixon, T., Goll, S., & Stanton, K. (1988). Case management issues and practices in head injury rehabilitation Rehabilitation Counseling Bulletin, 31, 325-343.

Eames, P. (1988). Behavior disorders after severe head injury: Their nature and causes and strategies for management. Journal of Head Trauma Rehabilitation, 3(3), 1-6.

Fisher, J. (1985). Cognitive and behavioral consequences of closed head injury. Seminars in Neurology, 5(3), 1-6.

Goodall, P. (1989). Return to work following traumatic brain injury. (Available from [Virginia Commonwealth University, Rehabilitation Research and Training Center, Richmond, VA]).

Gordon, W., Hibbard, M., & Kreutzer, J. (1989). Cognitive remediation: Issues in research and practice. Journal of Head Trauma Rehabilitation, 4(3), 76-84.

Griffith, E. (1983). Types of disability. In M. Rosenthal (Ed.), Rehabilitation of the head injured adult. (pp. 197-218). Philadelphia, PA: F.A. Davis & Co.

Hallauer, D., Prosser, R., & Swift, K. (1989). Neuropsychological evaluation in the vocational rehabilitation of brain injured clients. Journal of Applied Rehabilitation Counseling, 20(2), 3-7.

Hogan, R. (1988). Behavior management for community reintegration. Journal of Head Trauma Rehabilitation, 3(3), 62-71.

Kaplan, S. (1988). Adaptation following serious brain injury: An assessment after one year. The Journal of Applied Rehabilitation Counseling, 19, 8-17.

Kay, T., & Silver, S. (1988). The contribution of the neuropsychological evaluation to the vocational rehabilitation of the head-njured adult. Journal of Head Trauma Rehabilitation, 3(1), 65-76.

Leland, M., Lewis, F., Hinman, S., & Carrillo, R. (1988). Functional retraining of traumatically brain injured adults in a transdisciplinary environment. Rehabilitation Counseling Bulletin, 31, 289-297.

Long, C., Gouvier, W., & Cole, J. (1984). A model of recovery for total rehabilitation of individuals with head trauma. Journal of Rehabilitation, 4(1), 39-45.

Lyons, J., & Morse, A. (1988). A therapeutic work program for head injured adults. The American Journal of

Occupational Therapy, 42(6), 364-370.

Malkmus, D. (1989). Community re entry: Cognitive communicative intervention within a social skill context. Topics in Language Disorders, 9(2), 50-66.

Moore, R., & Bartlow, C. (1989). Vocational limitations and assessment of the client who is traumatically brain injured. Journal of Applied Rehabilitation Counseling, 21(1), 3-8.

Murray, D. (1985). The walking wounded. The British Columbia Medical Journal, 27(8), 27-30.

Musante, S. (1983). Issues relevant to the vocational evaluation of the traumatically head injured client. Vocational Evaluation and Work Adjustment Bulletin, 2, 45-50.

National Institute of Handicapped Research. (1986). The silent epidemic: Rehabilitation of people with traumatic brain injury. Rehab Brief, 9(4), 1-4.

Peck, E., Fulton, C., Cohen, C., Warren, R., & Antonello, K. (1984). Neuropsychological, physical and psychological factors affecting long term outcomes following severe head injury. Paper presented at the annual meeting of the International Neuropsychological Society, Houston, TX.

Rappaport, M., Herrero-Backe, C., Rappaport, M., & Winterfield, K. (1989). Head injury outcome up to ten years later. Archives of Physical Medicine and Rehabilitation, 70, 885-892

Stapleton, M. (1986). Maryland rehabilitation center closed head injury study: A retrospective survey. Cognitive Rehabilitation, 5, 34-42.

Stonnington, H. (1986). Traumatic brain injury rehabilitation. (Reprinted with permission of author by National Head Injury Foundation, 1986).

Sauer, G., Greene, J., & Farr, S. (1984). Planning for the vocational implications of head trauma. Paper presented at the Annual Convention of the Southwestern Psychological Association, April 1984, New Orleans, LA.

Wehman, P., Kreutzer, J., Stonnington, H., Wood, W., Sherron, P., Diambra, J., Fry, R., & Groah, C. (1988a). Supported employment for persons with traumatic brain injury: A preliminary report. Journal of Head Trauma Rehabilitation, 3(4), 82-94.

Wehman, P., Kreutzer, J., Wood, W., Morton, M., & Sherron, P. (1988b). Supported work model for persons with traumatic brain injury: Toward job placement and retention. Rehabilitation Counseling Bulletin, 31, 298-312.

Wehman, P., West, M., Fry, R., Sherron, P., Groah, C., Kreutzer, J., & Sole, P. (1989). Effect of supported employment on the vocational outcomes of persons with traumatic head injury. Journal of Applied Behavior Analysis, 22, 395-405.

Additional References

Blosser, J., & DePompei, R. (1989). The head injured student returns to school: Recognizing and treating deficits. Topics in Language Disorders, 9(2), 67-77.

Carberry, H., & Burd, B. (1986). Individual psychotherapy with the brain injured adult. Cognitive Rehabilitation, 4, 22-24.

Fraser, R., Dikmen, S., McLean, A., Miller, B., & Temkin, N. (1988). Employability of head injury survivors: First year post-injury. Rehabilitation Counseling Bulletin, 31, 279-288.

Health Resource Center. (1989). The head injury survivor on campus: Issues and resources. (Report no. ED312800). Washington, D.C.: American Council on Education. (ERIC Document Reproduction Service No. EC 221 257).

Karp, F., & Flowers, S. (1988). Traumatic brain injury: Finding the information. Rehabilitation Counseling Bulletin, 31, 355-369.

Johnson, D., Napier, L., & Farish, J. (1988, November). Mississippi vocational rehabilitation counselors traumatic brain injury survey. Paper presented at the Seventeenth Annual Convention of the Mid-South Educational Research Association, Louisville, KY.

McMahon, B., Shaw, L., & Mahaffey, D. (1988). Career opportunities and professional preparation in head injury rehabilitation. Rehabilitation Counseling Bulletin, 31,

344-353.

Milton, S. (1988). Management of subtle cognitive communication deficits. Journal of Head Trauma Rehabilitation, 3(2), 1-11.

Rose, M. (1988). The place of drugs in the management of behavior disorders after traumatic brain injury. Journal of Head Trauma Rehabilitation, 3(3), 7-13.

Wood, R. (1988). Management of behavior disorders in a day treatment setting. The Journal of Head Trauma Rehabilitation, 3(9), 53-61.